HONOLULU
LA JOLLA
MONTEREY
TIBURON

SOUTHWEST FISHERIES CENTER

MONTHLY REPORT - DECEMBER 1979

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To change the delivery address of the Southwest Fisheries Center Monthly Report, or to cancel your subscription, please notify:

Editor, Southwest Fisheries Center
P.O. Box 271
La Jolla, California 92038

IZADORE BARRETT, Center Director
JOHN F. CARR, Deputy Director
LILLIAN VLYMEN, Editor

SOUTHWEST FISHERIES CENTER
LA JOLLA, CALIFORNIA

HONOLULU LABORATORY
LA JOLLA LABORATORY
TIBURON LABORATORY
PACIFIC ENVIRONMENTAL GROUP

MONTHLY REPORT - DECEMBER 1980

STATUS OF PUBLICATIONS

Published

Brill, Richard W., and Andrew E. Dizon. 1979. Effect of temperature on isotonic twitch of white muscle and predicted maximum swimming speeds of skipjack tuna, Katsuwonus pelamis. Environ. Biol. Fish. 4:199-205.

Latent period, rise time, contraction time, and half relaxation time from isotonic contractions of isolated white muscle samples from skipjack tuna, Katsuwonus pelamis, were determined at 20°, 27°, and 34° C. These parameters were found to be inversely proportional to temperature (Q_{10} = 1.47, 1.67, 1.62, and 1.72, respectively). The data show that contraction time and the effect of temperature on contraction time of skipjack tuna white muscle are not unique when compared to other equal-sized teleosts. Based on contraction time, maximum swimming speeds at each muscle temperature were calculated and found not signficantly to exceed the maximum speeds of other equal-sized teleosts, when comparisons are made at the same white muscle temperatures.

Smith, Susan E. 1979. Changes in saltwater angling methods and gear in California. Marine Fisheries Review 41(9):32-44.

One factor to be considered when biologists assess relative abundance of fish populations using catch-per-unit-of-effort data, is the change in efficiency of fishing gear and methods over a period of time. Such information is lacking for many recreational fisheries. This article traces developments in saltwater angling

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equipment in California from just before the turn of the century to the present. It also presents some examples of California fisheries that have been affected by developments in sportfishing methods and equipment, and documents current methods and tackle now used in these fisheries.

Smith, Susan E., and Susumu Kato. 1979. The fisheries of San Francisco Bay: Past, present and future, p. 445-468. In (T. J. Conomos, ed.) San Francisco Bay: The Urbanized Estuary. Pacific Division, Amer. Assoc. Advance. Sci., San Francisco, Calif. Allen Press.

This paper describes the history and current status of the fisheries that have existed within the San Francisco Bay-Delta complex. Emphasis is placed on the changing nature of the fisheries--how they have been affected by demand, resource availability, regulations and, in particular, alteration of the environment by man. Species life history information, where pertinent, is also presented. Fisheries covered are those for chinook salmon, striped bass, shad, sturgeon, Pacific herring, Northern anchovy, starry flounder, surfperch, sharks and rays, mollusks and bay shrimp.

Approved by Center Director

Huppert, Daniel D. Book Review: Hanneson, Rognvaldur, "Economics of fisheries: an introduction." For consideration for publication in the American Journal of Agricultural Economics.

Myrick, Albert C., Jr. Examination of layered tissues for age determination of odontocetes using polarized light microscopy. For publication in IWC Aging Symposium Papers.

Theilacker, Gail H. Effect of rearing container size on morphology and nutritional condition of jack mackerel, Trachurus symmetricus, larvae. For consideration for publication in Fishery Bulletin, U.S. (Note).

Administrative Reports

Mackett, D. A summary report on the Southwest Fisheries Center Workshop on tuna research planning, San Clemente, CA., September 11-13, 1979. SWFC Adm. Rep. No. LJ-79-42.

Bartoo, N. and S. Kikawa. Report of the Fourth North Pacific albacore workshop. SWFC Adm. Rep. No. LJ-79-46.

HONOLULU LABORATORY

RESOURCE ASSESSMENT AND DEVELOPMENT INVESTIGATIONS (RADI)

New Fishing Gear Tested on Cromwell

Richard N. Uchida, Leader, Insular Resources Task, reported that the NOAA research vessel, Townsend Cromwell, completed a 7-day cruise (79-05) in Hawaiian waters to test bottom longline gear and a newly designed shrimp pot. Paul M. Shiota, Chief Scientist on the cruise, reported that although only a few snappers were taken in the longline gear in six sets, setting and retrieving procedures worked out satisfactorily and required only minor adjustments. The shrimp pots also worked well; in four sets of the gear 2,333 Heterocarpus ensifer and 2,405 H. laevigatus were taken in depths ranging from 334 to 841 m.

Hawaiian Fishery Resources Under Investigation

Dr. Jeffrey Polovina, Statistician, assisted by Research Assistant Robert B. Moffitt, completed a draft of an administrative report based on a preliminary analysis of commercial bottomfishing data collected by the Hawaii Division of Fish and Game. The draft report is presently undergoing internal review. Polovina is also examining bottomfishing data from the Northwestern Hawaiian Islands (NWHI) collected on research cruises of the Townsend Cromwell.

In conjunction with the Tripartite Cooperative Agreement to study the living resources in the NWHI, Polovina and Research Assistant Darryl T. Tagami, met with several principal investigators from the University of Hawaii Sea Grant Program and the Hawaii Division of Fish and Game to solicit information and data for an ecosystem model study.

Honolulu Laboratory Biologist Participates in New Caledonia Meetings

R. Uchida attended the South Pacific Commission's (SPC) Eleventh Regional Technical Meeting on Fisheries, which was held in Noumea, New Caledonia from December 5 to 10. Uchida served as a consultant at the meeting and submitted two papers, "Survey of bottomfish resources in the Northwestern Hawaiian Islands" by R.N. Uchida, B.M. Ito, and J.H. Uchiyama, and "Current status of fisheries in the Hawaiian Islands" by R.N. Uchida. Uchida also participated in the "Joint SPC-NMFS Workshop on Marine Turtles in the Tropical Pacific Islands," which was held from December 11 to 14 in Noumea.

Estimated Skipjack Tuna Landings in Hawaii for 1979 Below Long-Term Average

The December 1979 Hawaii landings of skipjack tuna were estimated at 82 metric tons (MT), which is 69 MT below the December 1978 landings and 47 MT below the 1948-78 long-term average for December. The cumulative landings for 1979 (January through December) were estimated at 2,692 MT, which is 390 MT below the 1978 landings and 1,585 MT below the 1948-78 long-term annual average.

FISH-ENVIRONMENT INVESTIGATIONS (FEI)

Movements of Striped Marlin Studied

Heeny S.H. Yuen, Leader, Recreational Fisheries Task, plotted monthly striped marlin, Tetrapturus audax, density contours based on the distribution of Japanese longline catch rates in the Pacific. The purpose of this analysis is to determine if the movements and migration of striped marlin can be deduced by the spatio-temporal distribution of striped marlin catch rates on longlines.

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H. Yuen prepared a list of requirements for the mid-life refurbishment of the Townsend Cromwell.

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Dr. Andrew E. Dizon, Acting Laboratory Director, attended the change of command ceremony at Kewalo Basin on December 14, at which time Cdr. John D. Stachelhaus relieved Cdr. Edward M. Gelb as Commanding Officer of the NOAA research vessel, Townsend Cromwell.

LA JOLLA LABORATORY

Coastal Fisheries Resources Division

LARVAL FISHES, COASTAL EAST PACIFIC

Methot/Longinotti Model Can Be Used to Study Growth of Juvenile Anchovy

Richard Methot, graduate student at Scripps Institution of Oceanography, and Susan Longinotti, Statistician, analyzed daily growth increments in otoliths of juvenile anchovy collected from September 1978 to February 1979. These data were used to estimate the birthdate distribution of the 1978 year class. An intermediate step in this estimation was the development of a linear model which estimates age from date of capture and standard length.

Age (days) = -259 + 2.735 * Length(mm) + .862 * Date (days from 1/1/78)
N - 172
Std. Dev. residuals = 23

This model can also be used to study growth of juvenile anchovy. It predicts that growth is 1.56 mm/month from September to February, i.e., a fish born on March 1 is 85.2 mm on September 1 and 93 mm on February 1. No independent estimate of growth could be made from modal analysis of the size distribution data available. Between November 1978 and December 1978 the median size decreased from 81 to 77 mm. This growth rate of 1.56 mm/month agrees with other estimates of young anchovy growth. Spratt (1975, Calif. Fish & Game, 61:116-126) estimated size at year 1 to be 92 mm and at year 2 to be 112 mm. This is an average growth rate of 1.67 mm/month. In the laboratory, Sakagawa and Kimura (Fish Bull. 74:271-279, 1976) estimated size at age 5.1 months to be 92.4 mm and at 10 months to be 99.3 mm; 1.42 mm/month.

Relationship Between Pollock Larvae and their Environment Examined

Division Chief Reuben Lasker and M.E. Clarke, graduate student at the Scripps Institution of Oceanography, are currently collaborating in examining the relationship between pollock larvae and their environment to assess differential survival under a variety of conditions in the Bering Sea. Samples collected during the PROBES (Processes and Resources of the Bering Sea Shelf) 1979 field season aboard the research vessel, Thomas G. Thompson, are being analyzed by Clarke.

Counts were completed of the numbers of microzooplankton in samples collected during threshold feeding experiments using walleye pollock larvae, Theragra chalcogramma, reared on board the Thompson. Although natural concentrations of microzooplankton were as high as 70/liter, no feeding by larval pollock occurred in laboratory experiments. However, larvae were capable of feeding since they avidly took rotifers and Artemia which were supplied separately.

The stomach contents of about 100 pollock larvae ranging in size from 11 mm to 26 mm were examined. Pollock were collected at a station occupied during a 24-hour period in the Bering Sea. Preliminary results show no clear change in feeding intensity between day and night.

Work is also beginning to determine differences in growth rates, using otoliths, of pollock larvae collected in two separate and distinct regimes in the Bering Sea.

Cruise Results Indicate Oceanic Conditions Favorable for Early Survival of Anchovy Larvae

Dr. R. Lasker, Division Chief, reports that phytoplankton and zooplankton sampling was done on CalCOFI Lines 87 (off Santa Monica), 90 (San Onofre) and 93 (Del Mar) during a cruise of the David Starr Jordan, December 19 through 21, to assess larval anchovy habitat conditions. The Southern California Bight was exceptionally calm during December and it was of great interest to see if there was strong thermal stratification of the ocean and whether potential larval anchovy food organisms had aggregated. Preliminary results show that there was strong thermal stratification, a sharp thermocline at about 30 meters was well formed throughout the Bight, and a layer of organisms, believed to be Gymnodinium splendens, was prevalent from Santa Monica Bay south to Del Mar. In earlier work, Dr. Lasker showed that these kind of conditions are excellent for early larval survival of the northern anchovy. Vertical tows were taken for fish eggs and larvae and are currently being sorted to ascertain if anchovy spawning was prevalent in the Bight during December.

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A paper titled, "Free-Fall Particle Counter for Ocean Surveys," was prepared by Dr. Lasker and Jack Brown for delivery at the Symposium on Unconventional and Indirect Sampling Techniques of Plankton and Nekton, which will be held at the American Society of Limnology and Oceanography (ASLO) meeting at USC in January. Details of the operation of the free-fall particle counter are given, as well as its calibration and field testing. The completed manuscript is intended for publication in the CalCOFI Reports.

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Ms. M.E. Clarke, a graduate student at Scripps Institution of Oceanography, and Dr. Lasker attended a meeting in Yosemite on PROBES (Processes and Resources of the Bering Sea Shelf). This is a National Science Foundation Polar Program which conducts cruises yearly in the Bering Sea, whose aim is to define the Bering Sea ecosystem leading to the major fish resource, pollock (Theragra chalcogramma). Dr. Howard Feder of the University of Alaska has joined Dr. Lasker in a component study of this ecosystem, to mature and rear pollock in the laboratory. They expect to use the larval pollock as a bioassay organism for Bering Sea water, i.e., to see which areas

of the Bering Sea produce enough food for first-feeding pollock larvae. Plans for 1980 were finalized at this conference. Following the PROBES meeting, Dr. Feder spent a few days at the Southwest Fisheries Center to obtain information on equipment and supplies for the pollock maturation and rearing work.

German Scientist to Cooperate on Vertical Distribution Study

In cooperation with Scripps Institution of Oceanography/Marine Life Research Group, Coastal Division scientists, headed by Dr. G. Moser, Fishery Biologist, have been awarded 3 weeks of ship time on the research vessel, Ellen B. Scripps in March. Dr. T. Pommeranz of the Institut fur Meereskunde, Kiel, Germany, has been invited to join this cruise. He will bring a special multiple opening/closing net to determine the vertical distribution of fish larvae and invertebrates in the Southern California Bight.

Biological Effects of Oceanic Circulation Described in Recent Paper

Dr. R. Owen, Oceanographer, completed a manuscript this month, "Fronts and eddies in the sea: mechanisms, interactions and biological effect." In this paper Owen describes patterned circulations of dimension ranging from the microscale to mesoscale in the open sea, and reviews work on biological effects of such circulations. Mechanisms by which organisms become locally concentrated, and thus more available for predation by fish and their larvae, appear to operate on every scale upwards of a few cm and may persist from hours to virtual permanence. Patterning circulations may selectively operate on single components of the plankton, or may assemble a variety of organisms and create new communities. The paper will be submitted for consideration for publication to Proceedings of the California Island Multi-Disciplinary Symposium.

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Fishery Biologist G. Theilacker revised her manuscript entitled, "Effects of handling and preservation on body measurements of northern anchovy, Engraulis mordax, larvae," and resubmitted the manuscript to Fishery Bulletin. Ms. Theilacker submittted another manuscript entitled, "Effect of rearing container size on morphology and nutritional condition of jack mackerel, Trachurus symmetricus, larvae" to Fishery Bulletin this month to be considered for publication as a note.

COMMERCIAL AND RECREATIONAL FISHERIES RESEARCH FOR MANAGEMENT

Analyses Continue of Anchovy Stock Assessment Methods

Both Susan Picquelle, Statistican, and Doyle Hanan of the California Department of Fish and Game have continued to make progress in their analyses of alternative stock assessment methods. Most of the work completed during December concerned the construction of data files for further use and the intermediate results for structuring statistical tests. Hanan, using a multi-level sort of the entire anchovy vessel log file, produced a new file with proper ordering by date and by record order within dates. A FORTRAN program is being written to calculate catch-per-effort from the resulting file.

Picquelle completed the first phase of the analysis of the aerial resource monitoring data, resulting in classification of the sighting-per-unit effort (SPUE) data into coherent seasons and regions. This involved transferring the SPUE data by CFG block number and month to twelve color-coded maps (one for each month). Each block was color-coded according to the corresponding SPUE score. Patterns occurring through time and space were easily detected visually. Based on the visual examination, the following four seasons were identified:

1) Mid-spawning season - February - low SPUE scores over entire range.

2) Spring - March, April, May - high SPUE scores in coastal waters off Point Dume.

3) Summer - June, July, August - low SPUE scores.

4) Fall/Winter - September through January - concentration of high SPUE scores in coastal waters off Santa Barbara to San Clemente.

Also, the CFG blocks were grouped into ten small regions. Finally, Picquelle created a new effort data base that identified blocks searched in each newly-constructed region and season. The next step is to create a new sighting data base containing number of tons sighted for each region for each flight. After merging the two files, the statistical analysis of SPUE will proceed.

Progress Reported in Fishing Vessel Investment Study

Economist Jane McMillian reported continued progress on her investigation of the construction of fishing vessels in the United States. She is near completion on a first draft of the research conducted thus far. The estimates of construction costs for vessels in various fisheries are being made from data collected in the NMFS telephone survey of boatyards. Originally, it was planned to analyze these data using the ESP (Econometric Software Package); however, this package has proved insufficient for manipulating the data as required. Therefore, McMillan is using a Statistical Package for the Social Services (SPSS) which offers greater flexibility in data organization. She

will be developing estimates of construction cost which link the cost of each type of vessel to its length. These estimates will be used to arrive at estimates of the amount of capital participating in each fishery and area for each year. Data on the number of vessels participating in each fishery and the amount of new construction each year are being obtained from the Vessel Operating Units file. Data on the catch and revenue for each fishery are obtained from the General Canvas file. The value of the capital stock and value of new vessel construction are estimated using the construction cost equations.

Center Scientists Participate in Environmental Committee of the Commission of the Californias Training Session in San Diego

The Environmental Committee of the Commission of the Californias (a joint, California/Baja California commission chaired by Lt. Governor Mike Curb) held a 2-day training session in San Diego, December 10-11. The session was entitled, "Resources of California and Baja California: Social, Economic and Ecological Perspectives." Participating from the SWFC were Dr. D. Huppert and Alec MacCall. Huppert spoke as a panelist during the morning session, "The Dynamics which affect the Marine Resources of California: the Economy, Biology, Law and Environment," on Decemer 10 and chaired the afternoon workshop entitled, "Social and Economic Future of Marine Resources Exploitation." MacCall participated in the workshop on "Marine Ecosystem: Biology and Pollution of the California Bight." Most major political and industry groups in Southern California were represented at the meeting, and an equal number of counterparts from Mexico participated. Also attending from SWFC were Gail Theilacker, Jane McMillan and Nelson Ross.

Management Options for the 1980 Preliminary Management Plan Discussed at Pacific Hake Workshop

Dr. G. Stauffer of the La Jolla Laboratory and Lenarz of the Tiburon Laboratory attended the Pacific hake workshop at the Northwest and Alaska Fisheries Center in Seattle, November 20 - December 3 to discuss management options for the 1980 Preliminary Management Plan for the Washington, Oregon and California foreign trawl fishery. The workshop was attended by NMFS and State biologists and administrators and industry representatives. Four options for the 1980 Total Allowance Catch (TAC) for Pacific hake were reviewed. The primary concern was the proposed 50,000 metric ton (MT) carryover of the unfished portion of the 1979 quotas. After considerable discussion and debate, Stauffer proposed an alternative method of handling the uncaught portion of the 1979 TAC. This analysis considered the carryover as a net increase in the 1980 relative abundance, from which a parallel relative change in TAC was calculated. This resulted in TAC of 175,000 MT for 1980. The other critical problem in the hake fishery has been the incidental catch allowances. The foreign fishery in 1979 was terminated because the incidental catch of sablefish exceeded their allowance. After much discussion on the problems with managing the incidental species in this manner, the group agreed on an increase to 0.1% for sablefish. Bert Larkins, from NWAFC, will use the results of the workshop to revise the NMFS proposal for the 1980 supplement to the PMP.

Stock Assessment Task Force Workshop

Dr. Stauffer attended the workshop of the Stock Assessment Task Force in Seattle, December 17-19 to assist Dr. Lee Alverson, Task Force Chairman, in drafting the remaining sections of the Stock Assessment Report. The workshop was also attended by Murray Hayes (NWAFC), Jim Meehan (F/SR), Jim Zuboy (SEFC), and Emory Anderson (NEFC). The method sections written earlier were generally in good shape although some revising was necessary. The sections of "proper mix" and "communication" were redrafted and put in the context of the report. A review draft will be ready by mid-January for Center Director review.

Oceanic Fisheries Resources Division

Staff Concentrates Efforts on Preparation of Draft Environmental Impact Statement on Proposed Porpoise Regulations

Most effort this month in the Oceanic Division was directed toward preparation of information for a Draft Environmental Impact Statement (DEIS) on proposed porpoise regulations. On December 10 and 11, J. Coe, S. Herrick, R. Holt, W. Perrin, T. Smith and G. Sakagawa met with the staff of the Southwest Region and NMFS, Washington, D.C. to discuss the DEIS. Responsibilities for drafting the document were assigned and the Division staff have subsequently been preparing information for the Southwest Region.

Fishery Biologist Jim Coe and his staff prepared a discussion paper of options for gear and procedural operations. Fishery Biologist Dr. Warren Stuntz prepared a computer analysis of age structure of all spotted dolphins caught in the yellowfin tuna purse seine fishery from 1974-79 to determine whether there is a bias in the sample which Dr. Al Myrick is analyzing. Myrick has been aging a random sample of these spotted dolphin specimens to determine the age composition of this species in the fishery.

Decision Made to Continue Satellite-Linked Porpoise Transmitter Project

Drs. G. Sakagawa, W. Perrin and Fishery Biologist J. Jennings met at the Center on December 18 with Dr. A. Kemmerer and W. Gandy of the NMFS National Fisheries Engineering Laboratory of Bay St. Louis, Mississippi to discuss the status of the satellite-linked porpoise transmitter project and to establish a research plan. J. Jennings is the leader of this project. G. Gilbert of NASA-Goddard also attended part of this meeting.

Essentially the outcome of this meeting was an agreement to continue the project using NASA's NIMBUS-6 through the experimental period and to continue testing prototypes until test results conclusively indicate that the system is operational.

Currently a prototype unit attached to a porpoise in Hawaiian waters has failed to transmit signals to the NIMBUS-6 satellite and efforts will be made to determine causes for the unit's failure. Plans are also being made to attempt capture of the porpoise carrying the pack and to photograph the unit on the free-swimming animal.

Plans Completed for 60-day Porpoise Survey Cruise

Dr. David Au, Fishery Biologist and Scientific Cruise Leader, completed detailed planning for the 60-day survey cruise of porpoise and other marine mammals in the eastern tropical Pacific, scheduled to begin in early January, 1980. The NOAA research vessels, David Starr Jordan, based in San Diego and Townsend Cromwell, based in Honolulu, will work together during the cruise which is an essential part of the Southwest Fisheries Center's on-going research program of assessing the condition of the porpoise stocks involved in the tuna purse seine fishery.

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Mathematician Bruce Wahlen assisted Dr. A. Myrick in completing a statistical comparison of the number of growth layers determined from stained versus unstained teeth. Wahlen also consulted with Fred Dixon, Computer Sciences Corporation consultant, who is revising computer programs that will accept data received from Inter-American Tropical Tuna Commission observer trips to produce weekly kill estimates of porpoise.

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Dr. T. Smith traveled to Seattle in December to assist Dr. C. Fowler of the National Marine Mammal Laboratory in editing a book entitled, "Population Dynamics of Large Marine Mammals."

Tetracycline Used to Calibrate Tooth Layers in Tursiops with Time

Dr. A. Myrick reports that after the first six months of a 3-year project with the Hubbs-Sea World Research Institute a report was received which showed a seemingly unvarying rate of accumulation in dentinal material in tetracycline-marked teeth from 10 specimens of Tursiops being monitored. According to Myrick, this finding should permit scientists for the first time, to relate growth layers to real time.

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Myrick also completed the editing of papers presented at the Age Determination Conference and submitted these to the International Whaling Commission for publication.

TUNA/BILLFISH RESOURCES PROGRAM

Tuna Project Personnel Prepare to Depart on an Atlantic Tuna Tagging Cruise

Preparations are being completed for a three-month skipjack tuna tagging project in the western Atlantic, Fishery Biologist Ronald Rinaldo reports. The project, part of the First Commission for the Conservation of Atlantic tunas (KCAT) International Skipjack Research project, will be conducted by tuna project personnel aboard the NMFS-chartered, 88-foot baitboat, Rhonda Sue.

The primary purpose of the tagging project is to understand better the distribution, migration and stock structures of Atlantic skipjack tuna. The area of investigation will center on the area from the Lesser Antilles to the Northeast coast of South America, as far east as French Guiana.

Final cruise plans have been prepared, all equipment has been loaded on the vessel, and last minute repairs are being made by vessel owner, Captain Charles Smith, at a San Diego boatyard. The Rhonda Sue is scheduled to sail January 10, 1980.

A two-day training program was conducted at the SWFC by Living Marine Resources (LMR) NMFS contractor responsible for the conduct of the scientific part of the cruise. Attending the training session were: Wes Parks, Tuna Resources Program Leader; Ronald Rinaldo, Skipjack Tuna Tagging Project Leader; Dick Evans, Oceanographer; Dave Bickford, Scientific Technician; Phil Vergne, Chuck Peters, and Jim Lambert of LMR.

Albacore Workshop Planned at Southwest Fisheries Center

Dr. Norm Bartoo, Leader, Temperate Tuna Assessments, reported that the Fifth North Pacific Albacore Workshop will be held from June 30 through July 3, 1980 at the Southwest Fisheries Center in La Jolla, California. Invitations to scientists involved in research on albacore from Canada, Japan, Taiwan and the United States have been prepared.

The workshop being held in the wake of a very poor U.S. albacore fishing season will focus on determining the condition of the North Pacific albacore stock.

Tuna Vessel Participation in FAX Advisory Program Continues

During November 1979, 14 tuna seiners contributed synoptic weather data to the NMFS FAX Advisory Program at the La Jolla Laboratory. In all 133 weather observations were reported through NMFS-licensed radio station WWD. The table below compares program participation in November 1978 and 1979.

	November 1978	November 1979
Number of vessels with equipment	48	44
Number of vessels reporting	18	14
Number of weather observations reported	157	133
Number of XBT observations reported	9	0
Total Observations	166	133

Leading all program participants this month were the captains and crews of the Jo Ann and Santa Rosa. We wish to thank these and all other contributors.

PACIFIC ENVIRONMENTAL GROUP

OCEAN CLIMATOLOGY AND MONITORING

One of the benefits of NOAA Corps officers assigned to the PEG is the opportunity to broaden their capabilities and scientific backgrounds by taking graduate courses at the Naval Postgraduate School (NPS), while contributing to the group's mission. PEG's work requires an ability to program and manipulate large, modern computers. NOAA Corps officers and other personnel starting to work at PEG, therefore, also take courses in computer science, statistics and oceanography. After this initiation officers have obtained an extension of their tour in Monterey in order to enter a formal degree program at the NPS on a part-time basis.

Lt. Dale Bretschneider followed this procedure. By combining graduate study and work at PEG, he completed requirements last December for the Master of Science degree in Physical Oceanography at the NPS. His research dealt with non-tidal sea level variations at Monterey, California, a topic typical of the type of problem assigned to a NOAA Corps officer at PEG.

One of the basic needs in fishery oceanography is the ability to infer ocean varability from existing data sets. Historical sea level time series data are unique among marine data sources in that they have been obtained continuously and inexpensively over periods of decades or longer at a large number of fixed locations worldwide. Sea level records include not only periodic fluctuations due to astronomic tides but also non-tidal sea level fluctuations resulting from various oceanic and atmospheric processes. The latter can be isolated as anomalies by filtering out the astronomic tides, thus making measurements of sea level at adjacent coastal stations useful as a spatially integrated index of nearshore and offshore oceanographic and meteorological changes. Using this cost-effective method to monitor the environmental changes is of interest to the National Marine Fisheries Service.

In his work, Lt. Bretschneider examined the relative importance of the large scale atmospheric and oceanographic processes which affect non-tidal sea level measurements at Monterey, California. Variability on seasonal, monthly and hourly time scales were described as were the causes of these changes. An understanding of these processes will allow the use of the long series of sea level data to reconstruct historical changes in the oceanographic environment which, in turn, will aid in the understanding of past changes in distribution, abundance and availability of marine fish populations.

TIBURON LABORATORY

FISH COMMUNITIES INVESTIGATION

Research Opportunities and Problems in Manned Undersea Research to be Discussed at Northeast Fisheries Center

To define fishery problems and research opportunities within NOAA's Manned Undersea Program, a committee met December 12-14 at the Northeast Fisheries Center, Woods Hole, Massachusetts, with Dr. Edmund S. Hobson, Leader of Tiburon's Fish Communities Investigation, participating. The committee identified four major study needs: (1) to define fish community ecosystems, (2) to identify ecosystem response to habitat alterations, (3) to evaluate and improve harvesting methods, and (4) to investigate the possibilities of habitat enhancement (including aquaculture). Each committee member agreed to expand on points identified at the meeting and a final document synthesizing their contributions will be prepared next month.

New Computer Program to Aid In Development of Brown Rockfish Community Model

The community model for brown rockfish, Sebastes auriculatus, currently under development by the staff of the Rockfish Analysis Task, will benefit from a computer program being developed by Biological Aid Candis Cooperrider. The program will prepare data from the mark-recapture studies for analysis using the Seber-Jolly technique. This technique provides estimates not only of population size, but also the rates of recruitment and mortality, including apparent mortality caused by migration.

Manuscript Submitted for Publication

Dr. William H. Lenarz, Leader of the Rockfish Analysis Task, and co-authors S.P. Epperly, L.L. Massey, and W.R. Nelson of the Southeast Fisheries Center, submitted for consideration for publication in the Fishery Bulletin a manuscript entitled, "A generalized computer program for yield per recruit analysis of a migrating population with area specific growth and mortality rates." This manuscript describes how Lenarz's "Program MGEAR" can be modified for use with populations that have area-specific growth rates. It also examines problems that can arise using the arithmetic mode to calculate yield when a large difference exists between growth and mortality rates.

FISHERIES DEVELOPMENT INVESTIGATION

Samples Of Underutilized Fisheries Products Potentially Marketable in Japan

Sus Kato, Leader of the Fisheries Development Investigation, reports that samples of California seafood products sent to Japan this month elicited some favorable response and requests for further samples and information. The following samples were shipped, and the response to each is noted: (1) Whole, frozen shortbelly rockfish: a market order for one container load (about 15,000 pounds) was received, pending price negotiations. (2) Whole, frozen Pacific sanddabs: size (about seven inches) was perhaps too small; requested information on price and availability of larger size. (3) Cooked, iced rock crabs: requested information on price and availability of live crabs. (4) Rockfish eggs: requested price, availability, and more samples. (5) "Surimi" (minced flesh) made from shortbelly rockfish: two firms requested more information and further samples.

Kato and his staff plan to work with the California fishing industry to respond to these requests.

PHYSIOLOGICAL ECOLOGY INVESTIGATION

Pollution Research

Dr. Jeannette A. Whipple submitted the revised manuscript for consideration for publication which was presented at the Symposium on Pollution and Physiology of Marine Organisms at the Milford Laboratory, Connecticut. The paper is titled: "An ecological perspective of the effects of monocyclic aromatic hydrocarbons on fish."

Many of the staff in the Physiology Investigation were on leave status during December; however, personnel present for duty continued work on a number of other manuscripts as well as analysis of striped bass samples for studies of effects of pollutants on different life stages.

SOUTHWEST REGIONAL DATA MANAGEMENT AND ADP OPERATIONS

Orion Shipboard System Successfully Tested on Research Vessel, Jordan

Mark Sullivan, NOAA Corp Officer, reports that the ORION (Oceanographic Research Interactive Onboard Network) system was successfully installed and tested on board the research vessel, David Starr Jordan, during a special cruise on December 14-18. Installation of the system required the interfacing of computers and data acquisition equipment. Dr. Peter Eichhorst, San Diego State University (SDSU) under contract to the Southwest Fisheries Center performed extensive debugging of the interaction between the Pacific Marine Center-built CAMAC (Computer Automated Measurement and Control) and the Center's Hewlett Packard 9845 computer.

During this cruise, contractors Edward Coughran, UCSD and Dr. Norm Sondak, SDSU, were aboard to observe the operation. Coughran and Sondak will be determining future user needs for the ORION system and recommending system improvement designs to meet user needs.

Other Data Management Activities

Dorothy Roll, Computer Systems Analyst, reviewed all comments submitted by users on the SWFC ADP Requirements Study Report. She wrote an introduction which sets forth the intent of the study and modified the conclusions and recommendations. Chuck Oliver, Rich Charter and Roll will incorporate relevant suggestions by SWFC's users in the report; the revised report should be completed and submitted for user comment in mid-January.

The Financial Reporting System (FRS) was successfully operated in FY79 for the SWFC and SWR. Managers and project leaders were able to obtain up-to-date financial information in FY79. Oden Burris, Computer Programmer has initiated the SWFC FRS data base files for FY80. The SWR has been utilizing the system with FY80 financial data.

In December, the 1977 landing summary files for California, Oregon and Washington were completed for the Coast Wide System. The file is summarized by weekly catch on a coastal basis. Progress continues on the generation of the 1975 and 1976 data. It is envisioned that 1975 and 1976 data will be completed at the end of January 1980. The 1974-76 vessel file has been completed for the three states.

Bob Butler, Computer Programmer, has modified the program, DOJOBR, which schedules day and night jobs for all users on the INFONET system. Under the old version, an operator interactively runs the scheduling program each workday; the new version automates the scheduling. Once the program is initiated on the system, the jobs are scheduled daily without an operator's intervention. Automated scheduling resolves a common problem encountered when a holiday occurs duing a work week. In the past, under the old system no job files were available on a specific day following the holiday.

For the Pacific Environmental Group (PEG) in Monterey, California Programmer Burris generated a file of selected 1975 sportfishing data. He produced a file which 1) summarizes the annual party boat landings by species code, by month, and by block origin and 2) summarizes total effort by block by month. This file will be taped and sent to PEG for analysis.

Butler assisted the staff of the Marine Mammal Assessment and Monitoring Program by writing four analysis programs. The programs performed the following analysis: 1) trips by vessel class, 2) ranking porpoise cruise by kill/set, kill/ton, yellowfin catch on porpoise, 3) computing average kill/set and kill/ton and 4) generating kill rates and catch rates for porpoise sets stratified by porpoise schools captured for each of 3 years and combined years (1977, 1978 and 1979).

MISCELLANEOUS

PUBLIC RELATIONS

On December 9, Fishery Biologist Sus Kato of the Tiburon Laboratory, assisted by Ken Raymond, Scientific Illustrator from the La Jolla Laboratory, attended and manned a booth at the Fishermen's Festival in Avila Beach, California. The exhibit which was put together by Kato and Raymond illustrated the uses of underutilized fish species (primarily shortbelly rockfish and sea urchins). The Festival, an annual event in Avila, is to encourage public support of the fishing community. More than 2,000 people attended the event. Shown in the accompanying photograph is Aili Kato, son of Mr. Kato, who displays a sample of shortbelly rockfish. In the foreground is a sample of minced shortbelly rockfish flesh suitable for producing "surimi", a fish paste used in making Japanese fish cake products.

November 30 - H. Yuen of the Honolulu Laboratory presented a talk on yellowfin tuna biology to a group of University of Hawaii Sea Grant marine advisory agents.

December 7 - H. Yuen guided a group of nine ocean and fishery scientists and their interpreter from the People's Republic of China on a tour to the Polynesian Cultural Center.

15 - In lieu of Richard S. Shomura, Dr. Dizon attended the M and T Fishing Company's christening party for the FV Kathleen at Hawaiian Tuna Packers, Kewalo Basin. (M and T Fishing Company's officers are President Glenn Tanoue, Vice-President Kiyoshi Minami, and Secretary-Treasurer Kiyoshi Tanoue).

20 - R. Shomura attended the christening of the FV Wicked Wahine at Kewalo Basin, at the invitation of the owners and Captain Jeffrey Yee.

SEMINARS

La Jolla Laboratory

December 4 - John Fitch, former Research Director of the California Department of Fish and Game discussed, "the Amazing Otolith!"

19 - Dr. James S. Diana, Assistant Professor of Ecology and Fisheries, School of Natural Resources, University of Michigan presented a talk, Energetics of growth and reproduction in game fish populations."

Tiburon Laboratory

December 3 - The sixth joint seminar with San Francisco State University/Tiburon Laboratory was held at the Tiburon Center for Environmental Studies (San Francisco State University). The seminar presented by Dr. Doug Hammond, Assistant Professor of Geochemistry, University of Southern California, Los Angeles, was entitled, "Benthic Exchanges in San Francisco Bay and Potomac Estuaries." The seminar was hosted by Edward Ueber, Tiburon Laboratory.

6 - Dr. Jeannette A. Whipple presented the San Francisco State University Seminar on "Effects of Pollutants on Physiology of Striped Bass in San Francisco Bay, California." The seminar was held at the California Academy of Sciences, San Francisco.

17 - The seventh joint San Francisco State University/ Tiburon Laboratory was held at the Tiburon Center for Environmental Studies (San Francisco State University). The seminar was presented by Dr. James C. Kelley, Dean, School of Sciences at San Francisco State University, and entitled, "Biological Productivity and Coastal Upwelling." The seminar was hosted by Dr. Erwin Seibel, Director, Tiburon Center for Environmental Studies.

TRAINING

Tiburon Laboratory

December 11-13 - Michael J. Bowers, Biological Technician - Fish Pathology Workshop, University of California, Bodega Marine Laboratory.

VISITORS

Honolulu Laboratory

November 29 - Several VIPs from American Samoa were given a tour of the Kewalo Research Facility by Fishery Biologist Randolph K.C. Chang.

30 - Howard S. Harris, Manager, MESA Puget Sound Project, Seattle, Washington, met with R. Shomura to discuss oil research.

December 2 - T. Billy, SQID, Beverly H. Smith and Paul Toom, NMFS, Pascagoula, Mississippi and Tom Higerd, NMFS Charleston, South Carolina.

5 - Dr. Peter Pritchard, Florida Audubon Society, Maitland, Florida, visited the Laboratory en route to Noumea.

7 - Joan R. Taylor, U.S. Department of Commerce Library, Washington, D.C.

- Dr. A. Dizon provided a tour of the Kewalo Research Facility for the marine scientists from the People's Republic of China.

14 - Kenneth W. Osborn, Fisheries Advisor, Agency for International Development, Washington, D.C.

17 - Dr. Connor Bailey, International Center for Living Aquatic Resources Management visited R. Shomura.

- Dr. John L. Munro of the University of Paupa New Guinea, accompanied by R. Uchida, met with Shomura. Dr. Munro will be at the Honolulu Laboratory on a 4-week consultancy contract to work on research related to the NWHI.

La Jolla Laboratory

December 3-7 - Representatives from various NOAA elements at the Center for the Coastal Zone Color Scanning meeting.

14 - Dr. Howard Feder, University of Alaska.

17 - Paul N. Reilly, California Department of Fish and Game, Menlo Park, California.

17-21 - Henryk Ganowiak, Head, Science Information Center, Sea Fisheries Institute, Gdynia, Poland.

27 - Dr. Peter Miyake, Assistant Executive Secretary, International Commission for the Conservation of Atlantic Tunas, Madrid, Spain.

Pacific Environmental Group

December 20 - Tom Weingartner, University of Alaska, Fairbanks, AK.

21 - Arthur Hull, NOAA, NWS, Seattle, WA.

Tiburon Laboratory

December 3 - Robert Hoffman, Southwest Region, NMFS, Terminal Island, CA.

- James Slawson, Southwest Region, NMFS, Terminal Island, CA.

7 - Marvin Jung, State Water Resources Control Board, Sacramento, CA.

- John Radovich, California Department of Fish and Game, Sacramento, CA.

11 - Fred Piltz, Pacific OCS Office, Bureau of Land Management, Los Angeles, CA.

- Dick Wilhemsen, Pacific OCS Office, Bureau of Land Management, Los Angeles, CA.

28 - Nancy Poh, Librarian, California Academy of Sciences, San Francisco, CA.

MEETINGS AND TRAVEL

Honolulu Laboratory

December 1-16 - R. Shomura was on travel status to attend (1) the Indo-Pacific Fishery Commission Standing Committee on Resource Research and Development meeting (Dec. 3-6) in Hong Kong, (2) the South Pacific Commission's Eleventh Regional Technical Meeting on Fisheries (Dec. 10) in Noumea, and (3) the International Turtle Workshop (Dec. 11-14) in Noumea sponsored by the SPC-NMFS Honolulu Laboratory.

4 - Howard O. Yoshida attended the Fishery Development Plan meeting at the Department of Land and Natural Resources Board Room in lieu of Shomura.

7 - Research Assistant Bernard M. Ito attended a ciguatera meeting in the Honolulu Laboratory conference room. Thomas J. Billy, Seafood Quality and Inspection Division (SQID), NMFS, Washington, D.C. was also at the meeting.

La Jolla Laboratory

December 6-7 - F. Kellenberger was in Portland, Oregon to attend the Pacific Marine Fisheries Commission Data Goals Committee meeting.

9-13 - David Mackett traveled to Washington, D.C. to attend the NMFS Planners' meeting and the Regional/Center Directors' meeting.

10-13 - Director Barrett was in Washington, D.C. to attend the Regional/Center Directors' meeting.

- R. Lasker was in Yosemite National Park to attend the annual PROBES workshop.

11-13 - M. Laurs traveled to Las Vegas, Nevada to attend a SEASAT Commerical Users Group meeting.

19 - F. Kellenberger traveled to Sacramento to participate in the selection of a systems contractor for the Fishery Information Network (FIN).

20 - F. Kellenberger traveled to the Southwest Region to discuss data management activities.

Pacific Environmental Group

December 4-7 - Dr. Douglas McLain and Lt. Dale Bretschneider traveled to San Francisco, CA, to participate in the American Geophysical Union meeting.

8-10 - Lt. Dale Bretschneider traveled to Mobile, AL, to attend the launching ceremonies for the NOAA Ship Chapman to which he will be assigned.

18-19 - Dr. Richard Parrish traveled to Sacramento, CA., to attend a California Department of Fish and Game meeting to discuss the management of Pacific mackerel.

Tiburon Laboratory

December 7 - Ed Ueber traveled to Portland, Oregon, to attend the Data Needs Meeting on Groundfish. At this meeting, Ueber presented the position of the Groundfish Plan Development Team to the State and Federal Coordinated Data Needs Committee.

11-13 - Norman J. Abramson traveled to Seattle, Washington, to attend the Pacific Fishery Management Council Meeting as a member of the Pink Shrimp Management Plan Team. The second draft of the Pink Shrimp Management Plan was presented to the Council who returned it to the Team for revision.

12-14 - Dr. Edmund S. Hobson traveled to Woods Hole, Massachusetts, to participate in a Meeting of the Advisory Committee for NOAA Man-in-Sea program.

14-18 - Ed Ueber presented the draft of the Groundfish Management Plan at public hearing held in Monterey, Long Beach, and Eureka, California.

PERSONNEL ACTIONS

Honolulu Laboratory

December 3 - Sharon D. Hendrix, Biological Aid (Fisheries) - Conversion to excepted appointment.

12 - Brent M. Miyamoto, Computer Aid - Completion of temporary appointment.

16 - Suzanne A. Ellard, Time and Leave Clerk (Typing) - Temporary appointment.

31 - James H. Prescott, Biological Technician (Fisheries) - Temporary appointment.

La Jolla Laboratory

December 2 - Daisy Gaston, Budget and Accounting Technician - Reassignment.

16 - David Bickford, Biological Technician - Temporary appointment.

- Sondra Pauly, Clerk-Typist - Temporary Appointment.

21 - Noelle Beerman, Statistical Assistant - Resignation.

26 - James Cotton, Biological Technician - Excepted appointment.

- Michael Graybill, Biological Technician - Excepted appointment.

- Michael Newcomber, Biological Technician - Excepted appointment.

- Michael Sinclair, Biological Technician - Excepted appointment.

- Marc Webber, Biological Technician - Excepted appointment.

- Russell Shea, Biological Technician - Excepted appointment.

- Jerry Kashiwada, Biological Technician - Excepted appointment.

- Philip Unitt, Biological Technician - Excepted appointment.

- Robert Pitman, Biological Technician - Excepted appointment.

Tiburon Laboratory

December 11 - Rahel Fischer, Data Clerk - Temporary appointment.

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